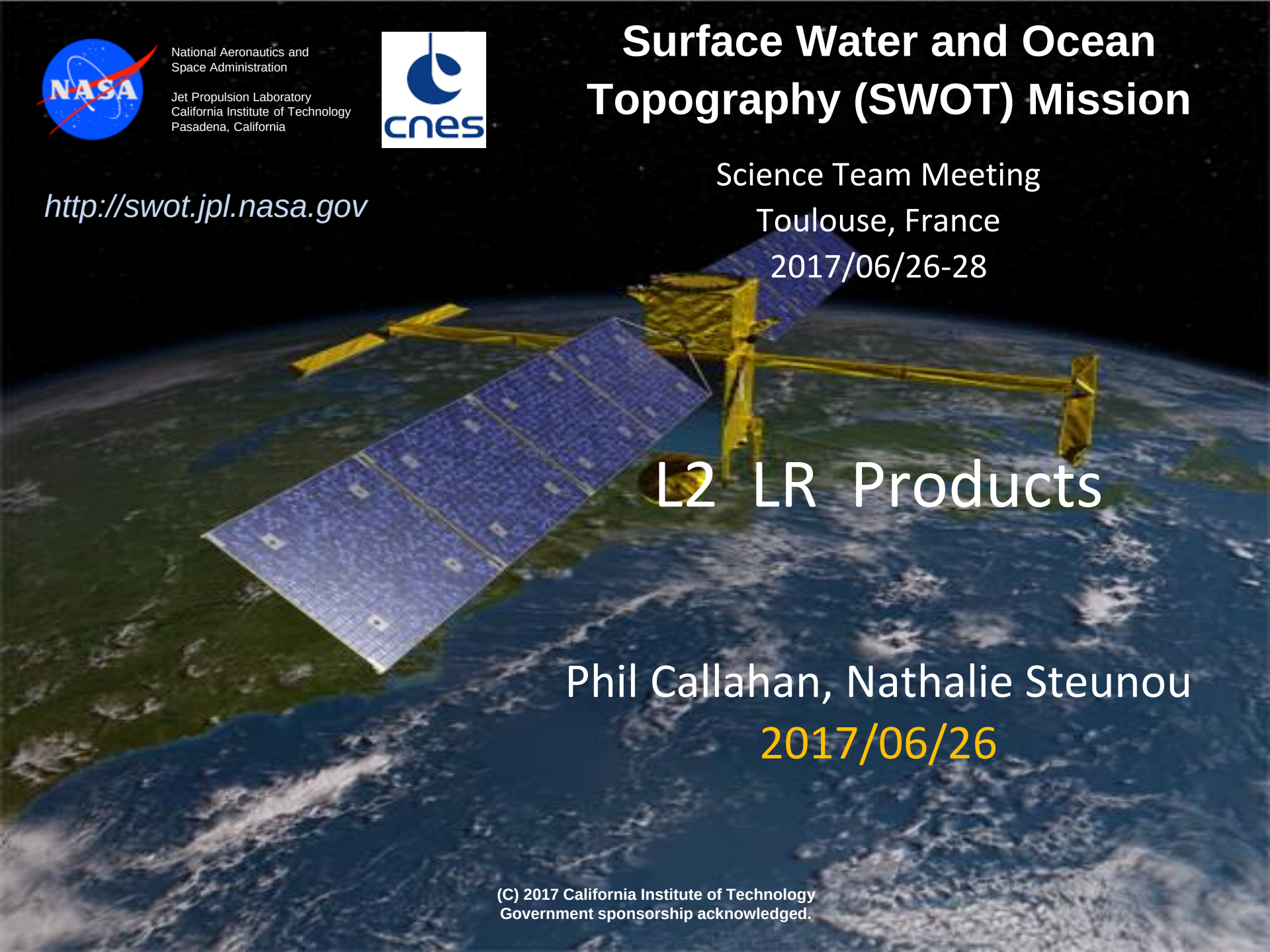

National Aeronautics and Space Administration

Jet Propulsion Laboratory
California Institute of Technology
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Surface Water and Ocean Topography (SWOT) Mission

Science Team Meeting
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http://swot.jpl.nasa.gov

L2 LR Products

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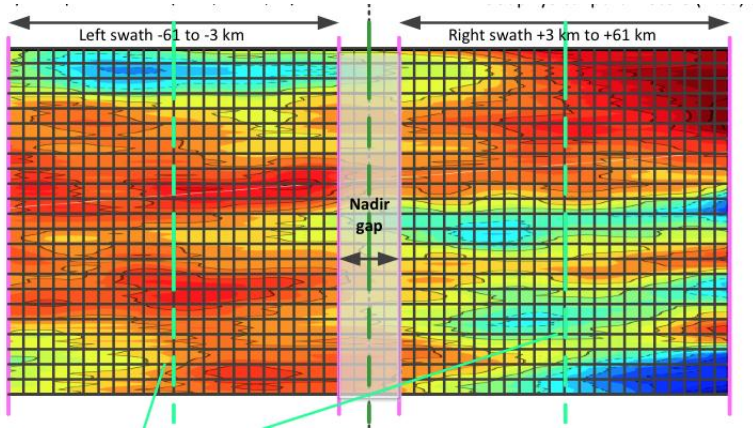
L2 LR Product Overview

- The ADT has interacted with Science Team representatives and arrived at the following suite of products for the LR data
  - **P1:** L2A/B LR 2 km “Light” SSH/SSHA
  - **P2:** L2A/B LR 2 km “Heavy” 2 km SSH/SSHA
  - **P3:** L2A/B LR 2 km Sigma0, Wind, and Wave
  - **P4:** L2A LR 250 m SSH, Sigma0, and Mitigation Power Images and Variance



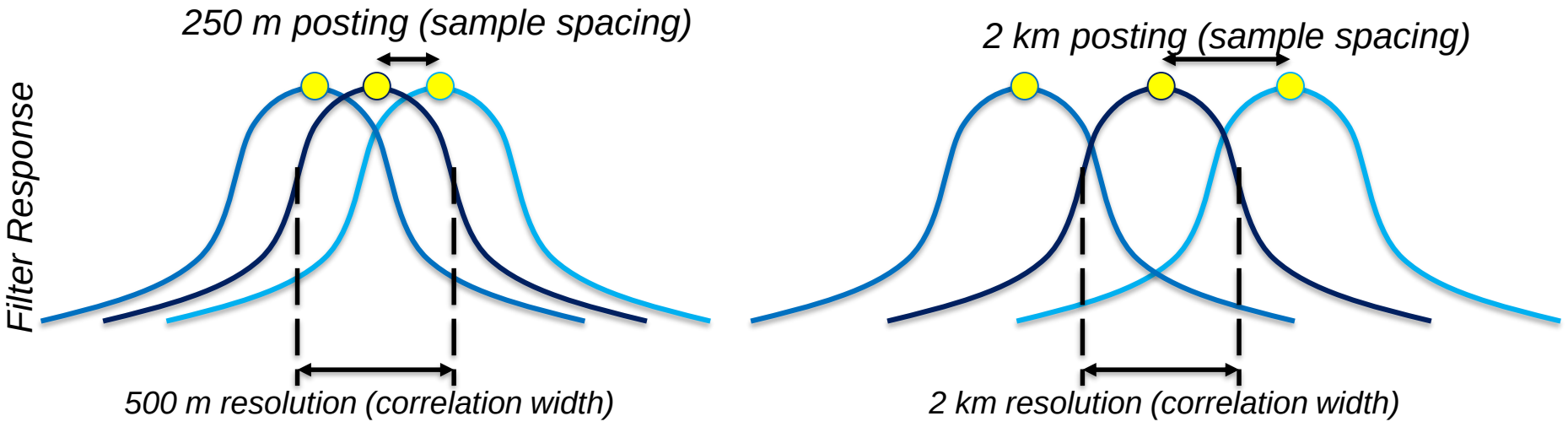
- Granule is pass: half rev min/max lat
  - Swath-oriented grid
    - ♦ L2A is provided on native grid (Center beam of 9 squinted beams)
    - ♦ L2B is provided on fixed grid

- “Mitigation Products” – Power & Power Variance at 250 m and Doppler Centroid image at 2 km – have been added to OBP output based on ATBDs provided after 2016 Science Team meeting.

- Prototype products available early 2018

LR Posting and Resolution

- The 250/500m data comes from the telemetry 9 beam data with 250m posting that are filtered onboard to $(500m)^2$ resolution (see picture below left)
  - Outer beams are slightly wider and not symmetric
  - Noise ~ 4x noise of 2 km data
- 2 km data produced by filtering 250/500m data with filter with full width at half max = 2 km, posted at 2 km
  - Noise ~ 2 cm, including both random and systematic effects



$250/(500)^2$ m Data

$(2\ km)^2$ Data

P1: L2 LR 2km Light SSH/SSHA

- Expected to serve most users who are interested in SSHA
- Contents
  - SSH fully corrected for instrument and propagation effects
  - SSHA = fully corrected SSH with geophysical effects applied (e.g., models for mean sea surface, tides, etc)
  - Main flags
  - Main range/height corrections
  - Main geophysical fields/references
  - Crossover Calibration and Internal Tide (neither applied)

- Initial volume estimate ~1.0 GB/day
  - Including many corrections to allow possibility for updating or seeing the effects of some corrections
  - Filtered to 2 km posting and resolution

P2: L2 LR 2km Heavy SSH/SSHA

- For expert users to evaluate SSH, instrument corrections, geophysical corrections and references (baseline and alternative)

- Includes copy of “Light” product so that users need to only get 1 file
- Additional contents
  - Orbit information, flags
  - Second (alternative) geophysical models (tides, mean sea surface)
  - Radiometer data
  - KaRIn calibrations, corrections, and flags
  - Mitigation Doppler Centroid (or derived SWH)

- Initial volume estimate ~2.0 GB/day
  - Including copy of “Light” SSH/SSHA product.
  - Filtered to 2 km posting and resolution

P3: L2 LR 2km Sigma0, Wind, Wave

- Provide all sigma0, wind, wave information in one file for users who want to study air-sea interactions

- Contents
  - KaRIn sigma0s, corrections, flags, derived wind speed
  - KaRIn SWH (baseline currently assumed to be 1 per swath) and SWH used for SSB
  - Wave information derived from mitigation Doppler centroid product
  - Wind and wave model values at each cell location

- Initial volume estimate ~0.66 GB/day
  - Filtered to 2 km posting and resolution

P4: L2 LR 250/500m Data

- For expert users to evaluate SSH, flagging at finest resolution
- Contents
  - KaRIn SSH, sigma0 250/500m data combined (interpolated) at beam0 location along track (azimuth). To be only native L2A.
    - ♦ “250m data” comes from the telemetry 9 beam data with 250m posting that are filtered onboard to 500m resolution. Also filtered in range.
  - Mitigation power and power variance images onboard processed with 250m square window on beam 0 (only). May be scaled to sigma0.
  - Flags
  - Reminder: SSH is relatively noisy ~4x the 2km data ~ 8 cm
- 250/500m SSH and Mitigation in same file because
  - Mitigation images mainly for flagging of 250m data. Separate use not identified
  - Mitigation does not add significantly to volume of other 250m data
  - Mitigation data do not have separate location
- Initial volume estimate ~35 GB/day

Details Under Evaluation

- Including propagation effects and geophysical corrections data elements in “Light” SSH/SSHA file, or only in “Heavy” SSH/SSHA file.
- Including some Sigma0, Wind, and Wave info on SSH/SSHA files.
- Need for both native and fixed grid versions of SSH/SSHA, Sigma0/Wind/Wave files.
- Need for identical content in native and fixed grid files.
  - Example: Provide instrument correction on native grid files only.
- Placement of Mitigation Doppler Centroid derived wave information.
- Definition of some data elements and defaults over land.